7. (a) Draw labelled phase diagram of water system ? **3**

(b) Write short notes on the following : **3**

(i) Desilverisation of Lead

(ii) Triple point in phase diagram.

8. (a) Differentiate between Ideal and Non-Ideal Solution ? **3**

(b) How can you justify that Osmotic pressure is a colligative property ? **3**

9. (a) State and explain Raoult's Law. **2**

(b) Define Molal Depression Cosntant ? Derive the relationship between depression in freezing point and molality of dissolved state ? **4**

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B. Sc. EXAMINATION, 2026

(Sixth Semester)

(Re-appear Only)

CHEMISTRY

Paper–XIX CH-305

Physical Chemistry

Time : 3 *Hours*] [*Maximum Marks :* 32

Before answering the question-paper, candidates must ensure that they have been supplied with correct and complete question-paper. No complaint, in this regard will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting *two* questions from each Section. Q. No. **1** is compulsory.

(Compulsory Question)

1. (a) Define Stark-Einstein law of photochemical equivalence. **1**

(b) What is the difference between Molarity and Molality of a solution ? **2**

(c) What is Reverse Osmosis ? Give its importance. **2**

(d) What is Chmiluminiscence ? **1**

(e) What is meant by Thermodynamic Probability ? Illustrate with an example. **2**

Section A

2. (a) What is Statistical Mechanics ? Why there was a need for the branch of statistical mechanics ? **3**

(b) Discuss the following : **3**

(i) Thermodynamic Probability

(ii) Born-Oppenheimer Approximation.

3. (a) Write important feature of Maxwell Boltzmann Statistics. **2**

(b) Draw Jablonski Diagram ? Discuss the Radiative, Transitions, Fluorescence, Phosphorescence, IC and ISC. **4**

4. (a) What are Photochemical Reactions ? Give the main point of difference between photochemical R × *n* and thermochemical reaction ? **3**

(b) Write short notes on the following : **3**

(i) Photo-Inhibitors

(ii) Franck-Codon Principle.

5. (a) State and explain Grothus-Draper's Law ? **3**

(b) What do you understand by Partition Function ? Give its physical significance. **3**

Section B

6. (a) Define the terms : **3**

(i) Phase

(ii) Component

(iii) Degree of Freedom.

(b) Define Gibby Phase Rule ? How can you derive it thermodynamically ? **3**